

CLAIMS

WE CLAIM:

1. An implantable medical device, comprising:
an expandable support frame having a plurality of struts interconnected by bends, at least one of the struts defining a first portion having a first width, a second portion having a second width, and a third portion having a third width, the second and third widths being greater than the first width and the first portion disposed between the second and third portions;
a graft member having an edge in contact with a surface of a strut of the expandable support frame; and
at least one attachment element disposed circumferentially around a strut and through a thickness of the graft member.
2. An implantable medical device according to claim 1, wherein the strut defines a serpentine path.
3. An implantable medical device according to claim 2, wherein the strut includes a curvilinear portion and a linear portion.
4. An implantable medical device according to claim 3, wherein the linear portion comprises the first portion having the first width.
5. An implantable medical device according to claim 1, wherein at least one of the second and third portions define a projection.
6. An implantable medical device according to claim 5, wherein the projection has a substantially square, substantially triangular, substantially rectangular, or substantially semi-circular cross-sectional shape.

7. An implantable medical device according to claim 1, wherein the second and third portions define first and second opposing projections, and wherein the attachment element is disposed around the strut and between the first and second opposing projections.
8. An implantable medical device according to claim 1, wherein the attachment element is disposed around the strut at the first portion of the strut.
9. An implantable medical device according to claim 8, wherein the attachment element is disposed around the strut and between the second and third portions of the strut.
10. An implantable medical device according to claim 1, wherein the graft member comprises an extracellular matrix material.
11. An implantable medical device according to claim 10, wherein the extracellular matrix material comprises small intestine submucosa.
12. An implantable medical device according to claim 1, wherein the graft member comprises a natural or synthetic polymer.
13. An implantable medical device according to claim 1, wherein the graft member defines a valve for regulating fluid flow through the implantable medical device.
14. An implantable medical device according to claim 13, wherein the implantable medical device comprises a prosthetic valve.
15. An implantable medical device according to claim 1, wherein the graft member extends substantially coplanar with the strut.
16. An implantable medical device according to claim 1, wherein the graft member extends in a plane at an angle to the strut.

17. An implantable medical device comprising:
an expandable support frame having a plurality of struts interconnected by bends, at least one of the struts defining first and second opposing projections;
a graft member having an edge in contact with a surface of the at least one of the struts; and
at least one attachment element disposed circumferentially around the at least one of the struts at a point between the first and second opposing projections, the at least one attachment element disposed through a thickness of the graft member.
18. An implantable medical device according to claim 17, wherein the first and second opposing projections each have a substantially square, substantially triangular, substantially rectangular, or substantially semi-circular cross-sectional shape.
19. An implantable medical device according to claim 17, wherein the graft member comprises an extracellular matrix material.
20. An implantable medical device according to claim 19, wherein the extracellular matrix material comprises small intestine submucosa.
21. An implantable medical device according to claim 17, wherein the graft member comprises a natural or synthetic polymer.
22. An implantable medical device according to claim 17, wherein the graft member defines a valve for regulating fluid flow through the implantable medical device.
23. An implantable medical device according to claim 22, wherein the implantable medical device comprises a prosthetic valve.

24. An implantable medical device comprising:
an expandable support frame having a plurality of struts interconnected by bends;
a graft member having an edge in contact with a surface of a strut of the expandable support frame; and
an attachment element disposed circumferentially around a strut and through a thickness of the graft member;
wherein the strut defines means for substantially preventing migration of the attachment element along a length of the strut.
25. An implantable medical device according to claim 24, wherein the graft member comprises an extracellular matrix material.
26. An implantable medical device according to claim 25, wherein the extracellular matrix material comprises small intestine submucosa.
27. An implantable medical device according to claim 24, wherein the graft member comprises a natural or synthetic polymer.
28. An implantable medical device according to claim 24, wherein the graft member defines a valve for regulating fluid flow through the implantable medical device.
29. An implantable medical device according to claim 28, wherein the implantable medical device comprises a prosthetic valve.